

## SYSTEM FOR ENDOSCOPIC SUTURING

### Abstract

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A system for endoscopic suturing is provided having an endoscope, such as a gastroscope, with a distal end locatable in the body of a patient and a flexible shaft extending to the distal end, a flexible accessory tube coupled to the endoscope to be movable relative to the endoscope's shaft, and a tip coupled to the shaft of the endoscope having an opening through which one end of the accessory tube is received. A tissue suturing instrument is provided having a partially flexible shaft locatable through the accessory tube, and a tissue engaging end coupled to the shaft. The tissue engaging end has a vacuum sleeve enabling suction to be selectably applied at the tissue engaging end to capture tissue through an opening in the vacuum sleeve. Two needles are provided which extend through the shaft of the suturing instrument. Each needle is separately actuated into a gap in the instrument's tip, through tissue suctioned into the opening of the vacuum sleeve and into a ferrule at each end of a loop of suture. The system further includes a suture securing instrument having a partially flexible shaft locatable through the accessory tube, and a distal end coupled to the shaft. After removal of the suturing instrument from the accessory tube, a loop of suture extends through the tissue and the accessory tube, the suture securing instrument receives the free ends of the loop of suture at its distal end through a sleeve member, and the suture securing instrument is then inserted through the accessory tube to the location of the suture in the tissue. The suture securing instrument crimps the sleeve member and cuts the free ends of the suture to secure the suture closed. The suturing instrument and suture securing instrument are passed through the accessory tube without removal of the endoscope from the patient. The endoscope provides viewing by an operator of the engaging end of the suturing instrument for selecting placement of the suture through tissue, and of the distal end of the suture securing instrument to secure the suture closed.